

WHAT IS CLAIMED IS:

1. A folding-type mirror device for a vehicle, the mirror device comprising:

a support shaft including a base portion;

a case installed on the support shaft, the case including a support portion disposed around an outer periphery of the base portion of the support shaft, a bottom portion from which the support portion projects, and at least one reinforcing rib integrally connecting an outer surface of the support portion with the bottom portion; and

a mirror unit attached to the case and swingable around the support shaft, by rotation of the support portion around the support shaft, for positioning at positions including a viewing position and a folded position.

2. The mirror device of claim 1, further comprising a base which is mountable to a vehicle body and from which the support shaft stands.

3. The mirror device of claim 1, wherein the reinforcing rib extends radially from the outer surface of the support portion, and is formed integrally with the bottom portion.

4. The mirror device of claim 1, further comprising a positioning mechanism for holding the case and the mirror unit at either of the viewing position and the folded position.

5. The mirror device of claim 1, further comprising a motor base which is integrally mounted inside the case and includes a fitting portion fitted to a distal end portion of the support shaft, and an electric motor disposed on the motor base for swinging the case and mirror unit.

6. The mirror device of claim 1, wherein the mirror device is manually swingable.

7. An electrically powered folding mirror device for a vehicle, the mirror device comprising:

a support shaft including a base portion;

a case installed on the support shaft, the case including a fitting portion disposed around an outer periphery of the base portion of the support shaft;

a mirror unit attached to the case and swingable around the support shaft, by rotation of the fitting portion around the support shaft, for positioning at positions including a viewing position and a folded position;

a motor base attached inside the case;

an electric motor mounted to the motor base and including a motor output shaft which penetrates the motor base; and

a transmission mechanism provided inside the case, operationally connected to the motor output shaft, and including a worm gear connected with the motor output shaft so as to be moveable in an axial

direction of the motor output shaft but not rotatable relative to the motor output shaft, the transmission mechanism acting to swing the case and mirror unit when the motor is operated.

8. The mirror device of claim 7, further comprising a base which is mountable to a vehicle body and from which the support shaft stands.

9. The mirror device of claim 7, wherein the case includes an inner bottom portion rotatably supporting a lower end portion of the worm gear, and an upper end portion of the worm gear is rotatably supported by the motor base.

10. The mirror device of claim 7, further comprising a structure for blocking rotation of the motor base with respect to the case.

11. The mirror device of claim 10 wherein the structure for blocking rotation includes at least one of: a combination of fitting holes provided in the case and corresponding control portions provided at the motor base; and a combination of blocking holes provided in the case and corresponding blocking projections provided at the motor base.

12. The mirror device of claim 7, wherein the transmission mechanism includes a helical gear rotatably supported inside the case, and the helical gear meshes with the worm gear.

13. The mirror device of claim 7, wherein the transmission mechanism includes a ring gear fixed to an outer peripheral surface of the support shaft.

14. A folding mirror device for a vehicle, the mirror device comprising:

a stand;

a support shaft extending from the stand and including a base portion;

a case installed on the support shaft, the case including a fitting portion disposed around an outer periphery of the base portion of the support shaft;

a mirror unit attached to the case, and swingable around the support shaft, by rotation of the fitting portion around the support shaft, for positioning at positions including a viewing position and a folded position; and

a positioning mechanism at an interface of the stand and the case, the positioning mechanism including a plurality of convexities formed at the case and a plurality of concavities formed at the stand, the convexities being insertable into the concavities, and each convexity and each concavity including one end portion and another end portion,

wherein the one end portions of the convexities are surface-contactingly engageable with the one end portions of the concavities for holding the case and the mirror unit at one of the viewing position and the folded position, and the another end portions of the convexities are

surface-contactingly engageable with the another end portions of the concavities for holding the case and the mirror unit at the other of the viewing position and the folded position.

15. The mirror device of claim 14, further comprising a base which is mountable to a vehicle body and which includes the stand.

16. The mirror device of claim 14, wherein the convexities and concavities are uniformly spaced along peripheral directions of a plurality of concentric circles having different diameters, the center of the concentric circles being disposed at the axis of the support shaft.

17. The mirror device of claim 14, wherein the one end portions and the another end portions substantially correspond to portions of helical surfaces whose central axes substantially coincide with the axis of the support shaft.

18. The mirror device of claim 14, further comprising an electric motor and a transmission mechanism, the motor being disposed in the case and including a motor output shaft, the transmission mechanism being disposed in the case and operationally connected to the motor output shaft for acting to swing the case and the mirror unit when the motor is operated.

19. A folding mirror device for a vehicle, the mirror device

comprising:

a stand which is mountable to a vehicle body;

a support shaft projecting from the stand and including a base portion;

a case installed on the support shaft, the case including a fitting portion disposed around an outer periphery of the base portion of the support shaft;

a mirror unit attached to the case, and swingable around the support shaft, by rotation of the fitting portion around the support shaft, for positioning at positions including a viewing position and a folded position;

an electric motor disposed in the case and including a motor output shaft; and

a transmission mechanism provided inside the case and operationally connected to the motor output shaft for acting to swing the mirror and case unit when the motor is operated, the transmission mechanism including a gear plate rotatably mounted to the support shaft and including a clutch plate fixed to the support shaft, the clutch plate being capable of blocking relative rotation of the support shaft and the gear plate and capable of allowing relative rotation of the support shaft and the gear plate,

wherein one of the gear plate and the clutch plate includes insertion convexities and the other includes insertion concavities into which the insertion convexities are surface-contactingly fittable for the blocking of relative rotation.

20. The mirror device of claim 19, wherein the insertion convexities and insertion concavities each include at least one contact surface, the contact surfaces substantially corresponding to portions of predetermined helical surfaces whose central axes substantially coincide with the axis of the support shaft.

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